



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,925	07/16/2003	H. Mark Hanna	P05703US01	8869
22885	7590	01/06/2005		
MCKEE, VOORHEES & SEASE, P.L.C. 801 GRAND AVENUE SUITE 3200 DES MOINES, IA 50309-2721			EXAMINER GORMAN, DARREN W	
			ART UNIT	PAPER NUMBER
			3752	

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

Office Action Summary	Application No. 10/620,925	Applicant(s) HANNA ET AL.	
	Examiner Darren W Gorman	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 31-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 12, 13, 15-30 and 43 is/are rejected.
- 7) ☒ Claim(s) 6-11 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/20/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Invention Group I in the reply filed on December 15, 2004 is acknowledged. The traversal is on the ground(s) that method claim 31 is merely a different definition of the same subject matter of claims 1 and 43. This is not found persuasive because, as set forth in the restriction requirement, the method recited in claim 31 can be performed by a materially different apparatus from those recited in claims 1 and 43. As pointed out by Applicant in the second paragraph of page 10 of the December 15, 2004 response, the fact that the "rotatable member" is not recited until dependent claim 32 is a prima facie case that method claim 31 is patentably distinct from apparatus claims 1 and 43.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 31-42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on December 15, 2004.

Information Disclosure Statement

3. The IDS filed on October 20, 2003 is hereby acknowledged and has been placed of record. Please find attached a signed and initialed copy of the PTO 1449.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “70” has been used to designate both the end plate bolts and an injection knife hose in Figure 1B. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

- Reference number “31” in Figures 3B, 3E, and 7.
- Reference number “32” in Figures 3A and 3E
- Reference number “38” in Figures 1B, 3A, 3B, 3C, 3D, 3E, and 3F
- Reference number “42” in Figure 1B
- Reference number “74” in Figure 1
- Reference number “78” in Figures 6B and 6C

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR

Art Unit: 3752

1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

- On page 8, line 3, [inlet 24], both occurrences, should be changed to --inlet 18--.
- On page 9, line 28, [inlet 24] should be changed to --inlet 18--.
- On page 10, line 28, [impeller 22] should be changed to --impeller 30--.

Appropriate correction is required.

Minor Claim Suggestions By Examiner

7. The following change(s) are recommended to improve clarity of the claims. The claims have been examined on the merits including the suggested changes below.

In claim 20, on line 2, [a body] should be changed to --the body--.

In claim 43, on lines 3-4, [between inlet and a plurality of outlets] should be changed to --between the inlet and the plurality of outlets--.

Art Unit: 3752

In claim 43, on line 7, [a plurality of outlets] should be changed to --the plurality of outlets--.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

9. Claims 16, 18, 19, 21, 22, and 25-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 16, “the impeller” lacks antecedent basis. Further, the recitation, “wherein the fluid pathway comprises a spiral groove” is unclear because there is no cooperative relationship yet recited which positively defines where the groove is placed. Examiner suggests amending claim 16 to be dependent from claim 4 in order to overcome this rejection.

Regarding claim 18, “the impeller” lacks antecedent basis.

Regarding claim 21, “the plurality of openings” lacks antecedent basis. Is this recitation referring to “the plurality of outlets”?

Regarding claim 25, “the impeller” lacks antecedent basis.

Regarding claim 27, “the impeller” lacks antecedent basis.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 3752

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-5 and 18-30, and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Gould et al., USPN 6,003,534.

Regarding claims 1-5 and 18-30, Gould shows an anhydrous ammonia distributor manifold comprising a body (6), an inlet (16) to the body, a plurality of outlets (7) radially disposed and spaced apart around the body, a rotatable impeller (17) having an intermediate portion which includes a rotatable fluid pathway (18) defined at least in part by a spiral supply groove on an external surface of the impeller, the fluid pathway including an entry end (19) in fluid communication with the inlet of the body and an exit end (20) in fluid communication with the plurality of outlets from the body, and a distribution void (30) in fluid communication between the exit end of the fluid pathway and the plurality of outlets, so that anhydrous ammonia passes through and out the exit end of the fluid pathway and is distributed to the plurality of outlets through the distribution void (see Figures 3A and 3B). Gould further shows the apparatus including a bearing system (25, 26, 27) having an axle (25) with a bearing surface at a distal end extending inwardly of the body, the bearing system associated with the impeller to facilitate rotation of the impeller in the body in response to fluid pressure on the impeller (see Figures 3A and 3B). Further, Gould teaches the apparatus to include a plurality of fluid conduits (8), each one of said conduits extending from each outlet of the body via connectors (not shown), each of said fluid conduits terminating in an injection knife (10), and the anhydrous ammonia distributor being for use with a system which comprises an automotive vehicle (tractor-not shown) and a tank of anhydrous ammonia (2) (see Figures 1 and 4; and column 3, lines 32-50), which feeds the

Art Unit: 3752

anhydrous ammonia to the distributor manifold via a conduit (12) connected to the inlet of the body via a connector (not-shown) (see Figure 3B). Still further, Gould teaches a sensor (29) operatively positioned to derive a speed of rotation of the impeller (see Figure 3B; and column 4, lines 13-15 and lines 35-37). Gould also teaches that the impeller may alternatively be driven by an electric motor (see column 2, lines 25-26).

Regarding claim 43, Gould shows an anhydrous ammonia distributor comprising a housing (6) comprising an inlet (16), a plurality of outlets (7), a chamber between the inlet and the outlets, a rotatable impeller (17) positioned in the chamber, the impeller defining a rotatable external fluid pathway (18) in communication with the inlet, the impeller (as well as the inside of housing wall (13)) also defining a space (30) in fluid communication with the outlets, so that rotation of the impeller rotates the fluid pathway and distributes the anhydrous ammonia from the inlet to the space in fluid communication with the outlets.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 12, 13, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gould et al.

Regarding claims 12, 13, and 15, Gould shows all of the claimed limitations as recited in claim 5, however Gould is silent regarding specific dimensioning of the operating parts,

Art Unit: 3752

including forming the cross-sectional area of the supply groove to be generally equal to the cross-sectional area of the inlet of the body, forming the cross-sectional area of the inlet of the body to be generally equal to the sum of cross-sectional areas of the plurality of outlets from the body, and forming the angle of the spiral supply groove in such a way that one-half of the pressure of the anhydrous ammonia pushes longitudinally on the impeller and one-half of the pressure of the anhydrous ammonia pushes sideways on the impeller. However, regarding the "angle of the wall" recitation, Gould does expressly teach that the rotational speed of the impeller is governed in part by the "pitch" (i.e. the angle of the wall) of the spiral groove (see column 2, lines 19-25). Essentially, the angle of the wall of the spiral supply groove is a result-effective variable.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to dimension the cross-sectional areas of the body inlet, the spiral flow passageway groove, and the plurality of outlets in such a way as to optimize equal anhydrous ammonia distribution through the plurality of outlets. These particular dimensions can be determined by using routine experimentation in order to optimize the equal distribution of the manifold and do not represent a patentable departure from the teachings of Gould.

Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the angle of the wall of the spiral supply groove to produce an equal pressure distribution laterally vs. longitudinally on the impeller, in order to optimize the rotational speed of the impeller and the velocity of the anhydrous ammonia being supplied through the spiral groove, since it has been held that discovering an optimum value of a result

Art Unit: 3752

effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 17, Gould shows all of the claimed limitations as recited in claim 1, however Gould does not expressly teach providing a plurality of spiral grooves, each groove having an entrance in fluid communication with the body inlet and an exit in fluid communication with the distribution void.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide more than one spiral groove having fluid communication between the body inlet and the distribution void (the plurality of the spiral grooves being equally distributed around the circumference of the impeller for proper weight distribution), in order to ensure a more evenly distributed delivery of anhydrous ammonia to the distribution void, and since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (CA 7 1977).

Allowable Subject Matter

14. Claims 6-11, 14, and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 3752

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents to Garretson, Jones, Bauer, Ward, and Hultgreen et al., are cited as of interest.


16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W Gorman whose telephone number is 571-272-4901. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on 571-272-4901. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Darren W Gorman
Examiner
Art Unit 3752

DWG 1/3/05
DWG
January 3, 2005


STEVEN J. GANEY
PRIMARY EXAMINER
1/3/05